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A CASE FOR COORDINATING ECONOMIC DEVELOPMENT PLANNING WITH ENERGY PLANNING

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INTRODUCTION

Energy cost and reliability are inextricably intertwined with economic development. The best paying jobs are often tied to industries that are the biggest power consumers as well as the power consumers that care most about energy reliability. Perhaps for this reason, energy availability and costs has evolved from a top twenty site-selection factor to a top five site-selection factor in the last ten years.[1] According to the top site selection consultants, energy availability and costs are now more important than site-selection factors that receive the most press and public attention, such as state and local incentives, corporate tax rate, and status as a right-to-work state.[2] Yet policymakers spend most of their time focusing on these less significant factors while virtually ignoring what should be done to ensure reliable, low-cost energy.

Energy policy and planning is complicated. At the time of this writing, energy policy is still largely controlled at the state level. That said, the federal government does play an important role and recently attempted to intervene and dominate energy policy with comprehensive

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[1] Rita Williams & Larry Kramer, *Taxes and Incentives – Factor Into the Site Selection Equation*, AREA DEV. MAG., Feb./Mar. 2008, at 1, http://www.areadevelopment.com/corpSurveyResults/feb08/taxesAndIncentives.shtml.

[2] AREA DEV. MAG., 24TH ANNUAL CORPORATE SURVEY & 6TH ANNUAL CONSULTANTS SURVEY (Geraldine Gamble ed., 2010) [hereinafter *24th Annual Corporate Survey*], *available at* http://www.areadevelopment-digital.com/CorporateConsultsSurvey/24thAnnualCorporateSurvey.

climate-change legislation. The federal government also continues to pursue regulatory action that will greatly impact energy costs and availability. This paper argues that economic development policy and energy policy at the state level must be better coordinated. The state level coordination should occur at the planning stage of policy implementation. This paper shows how the growing importance of energy availability, reliability, and affordability requires economic development planners to be able to forecast future energy costs in order to plan for the effect energy costs will have on economic development.

Part I of this paper makes the case for the growing importance of energy availability, reliability, and affordability to foster economic development. This paper refers to "economic development" as the expansion of existing businesses within a state or the immigration of new businesses into a state. This immigration can be the expansion of a company into a state without a prior presence in the state, typically either a totally new enterprise or the complete relocation of a business. This immigration can be from another state or another country. These expanding and new businesses typically do not serve the local population but are national or regional businesses that could locate almost anywhere in the region.

Part I also explains the significant differences in energy availability and cost among states, regions of the United States, and some competing foreign countries. The term "energy" or "power" in this paper refers to electric power, however generated. There is a clear relationship between how electricity is generated and the cost of the energy. Methods of generating electricity are also impacted by factors such as carbon legislation, renewable standards, and regulation of pollutants associated with fuels, such as coal.

Part II offers a summary of the various types of energy policy typically found at the state and federal level and how each impacts or will impact energy costs. Local energy policies do exist, but this paper does not address them other than too say that they to must be considered as part of comprehensive economic development planning. Furthermore, the impact of the absence of an energy policy in nations competing for manufacturing jobs is an important consideration. Climate-change/energy-independence policies, such as mandating a portion of electricity generation to be derived from renewable sources ("renewal standard"), will raise the cost of electricity. Additionally, these policies may employ subsidies to support much of the renewable energy generation necessary to meet a renewable standard; therefore, these policies will continue to direct scarce resources, such as capital, academic, research and development, toward methods of energy

generation that may not make the most economic sense. Some renewable source generation may actually reduce energy availability and reliability while raising costs.

Part III of this paper addresses the current state of economic development planning and energy planning. For many states, such as South Carolina, coordinated strategic economic development and energy policy planning simply does not exist.[3] For other states, such as North Carolina, economic development and energy policy planning each exist at a very comprehensive level but are not sufficiently coordinated with one another.[4]

Part IV offers our recommendations for a coordinated planning process as well as specific recommendations states should consider when implementing a coordinated plan. While this paper takes no position on climate change, per se, there is no question that cleaner, more efficient electricity generation provides considerable benefits. Diversifying our generation sources and increasing energy independence also provide indisputable benefits.

Finally, we conclude by laying out the consequences of failing to pursue greater coordination between energy and economic development policy. We fear crisis may be near or even presently upon us as we write this paper and as the EPA writes its regulations on carbon pollutants tied to electricity generated by coal.

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[3] In February of 2007, then-Governor Mark Sanford established the Governor's Climate, Energy, and Commerce Advisory Committee that issued a final report on August 6, 2008. While the report is a good starting point, it does not appear to have affected state policy. S.C. CLIMATE, ENERGY, & COMMERCE ADVISORY COMMITTEE, FINAL REPORT (July 2008), *available at* http://www.scclimatechange.us/plenarygroup.cfm.

[4] The authors are most familiar and focus heavily on North Carolina and South Carolina. While North Carolina was at one time referred to as the "valley of humility between two mountains of conceit," there is none of that modesty where energy and economic planning and execution come into play. For an overview of North Carolina's energy policy, *See* N.C. STATE ENERGY OFFICE ET AL., NORTH CAROLINA STATE ENERGY PLAN (2003), *available at* http://www.doa.state.nc.us/energy/sep/docs/sep03.pdf.

I. ENERGY'S IMPORTANCE IN ECONOMIC DEVELOPMENT

A. OVERVIEW OF AVAILABILITY, RELIABILITY, AND AFFORDABILITY

Companies care about two aspects of energy: availability, which includes reliability, and cost. The availability of electricity played a critical role in the United States' massive economic growth from World War I to the early 1970's. Electricity fueled many productivity gains by making assembly lines, automation, robotics, and other computerized production possible.[5] The importance of electricity availability is well documented in numerous studies of the growth of third-world economies, which directly link gains in labor savings and educational achievement to availability.[6] In advanced economies, energy availability is most prominently a concern for large industrial projects, where major transmission lines are often required. The issue is not whether the lights stay on, but rather, whether there is enough power and the proper distribution of that power to run the plant?

By and large, availability is widespread in the United States, primarily because of massive rural electrification programs in the early 20th century. United States consumers are accustomed to enjoying abundant electricity, and take its availability for granted in their daily lives. However, large industrial customers and other major users have long been keenly aware of the role availability plays in finding a suitable location for their operations. Availability remains a factor, particularly when site location requirements push industry to remote locations, as is often the case for paper mills, mines, and steel mills. Additionally, the past decade has brought a proliferation of energy-intensive computing centers that also require robust electricity availability.

The North American Electric Reliability Council (NERC) defines "reliability" as both security and adequacy. NERC describes "adequacy" as "the ability of the system to supply the aggregate electric power and energy requirements of the consumers at all times," and

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[5] *See* S. H. Schurr, *Energy Use, Technological Change, and Productive Efficiency: An Economic-Historical Interpretation*, 9 ANN. REV. ENERGY 409 (1984).

[6] Michael Toman & Barbora Jemelkova, *Energy and Economic Development: An Assessment of the State of Knowledge*, (Stan. Univ. Program on Energy & Sustainable Dev., Working Paper No. 9, Nov. 2002), *available at* http://pesd.stanford.edu/publications/energy_and_economic_development_an_assessment_of_the_state_of_knowledge/.

"security" as "the ability of the system to withstand sudden disturbances."[7] Power outages are often described in terms of number, frequency, duration, and amount of load affected. However, of greater importance is the resulting economic consequence of an interruption of electric services.[8] This loss, while more meaningful, is often difficult to quantify. Computerized manufacturing processes, for example, are now so sensitive to power reliability and quality fluctuations from grid operations (or even natural events, such as lightning) that momentary blips, lasting as little as a second, can result in hours of lost manufacturing time and untold costs in lost production.[9]

While the availability of energy has been of primary concern to industrial customers over the past century since the electrification of the first textile factories in the Southeast, reliability has increasingly become a major concern as manufacturing processes have become increasingly sophisticated. As a result of increasing demands for electricity, particularly during peak residential usage hours, and experiments in deregulation throughout the 90's, many regions of the country began experiencing reliability problems. These reliability problems resulted in fluctuations, blackouts, and price increases at the wholesale level, which eventually led to consumer rate increases. Examples of reliability problems include:

- "August 10, 1996: a multi-state blackout in the West interrupted 30,000 MW of load to 7.5 million customers, in some areas for as long as nine hours.

- July, 1998: Public Service Company of Colorado was forced to institute rolling brownouts following an annual peak demand increase of 10%.

- August, 1998: Prices reached $999/Mwh in the Pennsylvania-New Jersey-Maryland (PJM) power exchange; the New England ISO issued a systemwide power watch; New York Power Pool members were asked to request conservation measures from customers; in the

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[7] N. AM. ELECTRIC RELIABILITY COUNCIL, RELIABILITY ASSESSMENT 1998-2007: THE RELIABILITY OF BULK ELECTRIC SYSTEMS IN NORTH AMERICA 10 (Sept. 1998), *available at* www.nerc.com/files/98ras.pdf.

[8] *See id.*

[9] JOSEPH ETO, DEEPAK DIVAN & WILLIAM BRUMSICKLE, OFFICE OF ELEC. TRANSMISSION & DISTRIBUTION, U.S. DEP'T OF ENERGY, PILOT EVALUATION OF ELECTRICITY-RELIABILITY AND POWER-QUALITY MONITORING IN CALIFORNIA'S SILICON VALLEY WITH THE I-GRID SYSTEM 26 (2004), http://eetd.lbl.gov/ea/emp/reports/52740.pdf.

Midwest, Detroit Edison and Consumers Energy asked customers to cut back, while UtiliCorp United, Kansas City Power & Light and Interstate Power all ordered interruptions for interruptible customers. In California, SDG&E set a new system peak and called for conservation measures, while the California ISO declared a Stage 2 Emergency when operating reserves fell below 5%.

- The summer of 1999 saw major outages hit New York City, Chicago, and New Orleans."[10]

These examples of reliability problems highlight the need for energy planning, and the need to coordinate that planning with economic development groups in direct contact with industrial customers.

B. COSTS

The second factor influencing the criticality of energy to industrial consumers is cost. The cost of energy is a business relationship between the company and the energy provider, and this relationship is very different and much more complex than experienced by residential consumers. Historically, power costs were such a minimal part of the overall value added to a product in most manufacturing operations, that other considerations, such as the cost associated with human capital, trumped the negligible increases of costs in labor-intensive manufacturing operations. However, as electricity made operational advances possible, and competition—both domestically and globally—forced companies to institute labor-saving efficiencies, the cost of power has become increasingly important in the overall operational costs of industry. This is reflected nationally, as declines in U.S. manufacturing productivity followed increases in energy prices.[11]

Over the last five decades, pressure to lower energy costs has incentivized energy-intensive companies to locate new facilities in lower-cost environments. Because of the capital-driven nature of many energy-intensive industrial customers, some older existing technologies have resisted moving, instead attempting to lower costs through

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[10] NED RAYNOLDS & RICHARD COWART, THE CONTRIBUTION OF ENERGY EFFICIENCY TO THE RELIABILITY OF THE U.S. ELECTRIC SYSTEM 6 (2000), *available at* http://ase.org/resources/electricity-reliability-white-paper.

[11] *See* COMM'N ON ELEC. IN ECON. GROWTH, NAT'L RESEARCH COUNCIL, ELECTRICITY IN ECONOMIC GROWTH, 80-83, 110-132 (1986).

modernization techniques—which reduce and change the characteristics of loads—and through negotiations with current providers.

C. IMPORTANCE OF AVAILABILITY AND COSTS

By all accounts, one of the greatest changes in the field of economic development over the past two decades is the speed in which companies bring new investments to market. Companies previously made methodical, deliberate decisions, followed by lengthy construction and commissioning processes. Presently, companies are compressing the time between the outlays of capital to the start of production in order to increase their return on investment. This shortens the length of the site selection process and places greater emphasis on sites with existing infrastructure and generation availability. Companies also prefer existing capacity because it allows them to forego upgrades to transmission infrastructure—which is often compounded by right-of-way issues—and orders for hard-to-source components, such as transformers, thus, shortening the construction cycle.

Moreover, as companies look to maximize public incentive support, they have come to evaluate new infrastructure needs items that require public or utility outlays as burdensome expenditures adversely affecting a company's bottom line. If sufficient infrastructure had already been in place, local governments would have likely used these outlays to sweeten incentive packages.

An annual survey, conducted over the past twenty-five years, demonstrates that the availability and cost of energy in the site selection process has significantly increased as a factor considered by corporate executives. In just four years, executives who make site selection decisions rated energy about 6% more important in their decision-making.[12] In overall criteria for their executive decision-making about site selection, energy jumped from the ninth-most-important factor to the fourth-most-important factor in 2009.[13] Some of this fluctuation may be attributable to variations in production, as energy costs become more of a factor as production increases. Despite the effects of annual economic fluctuations on executives' prioritization of factors, the

[12] *24th Annual Corporate Survey*, *supra* note 2, at 10-20 (summing the totals of the "very important" and "important" columns in figure 25).

[13] *Id.*

importance of energy costs and availability consistently ranks as an important criterion.

The increase in energy's importance in these rankings may be blunted by a number of factors. First, the unpredictable nature of energy markets over the past few years has left many corporate executives confused about what factors in energy are short-term versus long-term issues. For instance, in 1999, crude oil sold at $16.56 per barrel, but by 2008, the price had risen to $91.48. That steady increase suggests a long-term issue, but in the course of 2008, gas prices rose to $4.10 in July only to drop to $1.64 in December.[14] Similar fluctuations occurred with wellhead natural gas prices—$7.97 per Mcf in 2008 down to $3.67 in 2009. Meanwhile, industrial electricity prices rose an average of 3% – 4% annually from 2000 to 2007, in part because of price controls and long-term speculative contracts on fuel sources for generation.[15]

Deloitte Touch site selection consultants Darrin Beulow and Jovana Trkulja point out that when demand for energy is high, costs of improvements to infrastructure, generation and generation sources, and infrastructure to support reliability all drive up energy costs. But as demand decreases, so does a company's usage. This serves to lessen the negative impact of energy costs and correspondingly increase the focus on fixed costs. The 2008 Area Development Survey, for instance, rated the importance of energy costs as the third most important factor, primarily because of rising costs and concerns about availability.[16] And while electricity rates tend to range from $0.039 to $0.14 per KWh, labor rates can vary more than 20 from one community to the next.[17]

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[14] *Id.*

[15] *See* Nate Monosoff & Dick Sheehy, *Emerging and Growth Industries Zero in on Energy Availability & Costs*, AREA DEV. MAG., Apr./May 2008, *available at* http://www.areadevelopment.com/corpSurveyResults/apr08/energyAvailabilityAndCosts.shtml.

[16] Darin Buelow & Jovana Trkulja, *Factoring Energy into a Location Decision*, AREA DEV. MAG., Apr./May 2009, http://www.areadevelopment.com//corpSurveyResults/Apr09/energy-availabilty-costs-location-decision001.shtml.

[17] *Id.*

D. THE BEST JOBS ARE WITH COMPANIES THAT USE THE MOST ENERGY

Jobs are votes, politicians are apt to say. And while creating jobs is at the forefront of any economic development group's plans, a good economic developer understands that all jobs are not created equally. Some jobs are better because they pay more, pay better benefits, or are more likely to last long-term. At the top of the wish list for states and communities focused on industrial development are capital-intensive jobs. High capital projects tend to require higher skill-level workers to operate (and protect) expensive equipment and processes. Companies are willing to pay more for these higher-skilled workers. For example, data for the three major metropolitan statistical areas in South Carolina showed that operators of process machinery in capital-intensive facilities earned approximately 58% more on average than non-skilled operators and material handlers.[18]

By the nature of the production and power distribution machinery required, energy-intensive projects tend to be capital intensive. This presents a quandary for many economic developers. The best projects that create high-paying, permanent jobs are reliant on energy availability and affordability. These are the two areas economic developers often know the least about and over which they have the least control. Because often little is known about this important area, energy as a factor in economic development, is often ignored by planners and policymakers.

[18] BUREAU OF LABOR STATISTICS, U.S. DEP'T OF LABOR, MAY 2009 METROPOLITAN AND NONMETROPOLITAN AREA OCCUPATIONAL EMPLOYMENT AND WAGE ESTIMATES (2009), *available at* http://www.bls.gov/oes/current/oessrcma.htm (focusing on the Charleston, Columbia, and Greenville metropolitan areas of South Carolina).

E. COMPARATIVE ANALYSIS OF ENERGY COST BY STATE, REGION, AND NATION

Average Retail Price of Electricity to Ultimate Customers by End-Use Sector, by State, Year-to-Date through October 2010 & 2009[19]

State	Industrial		Overall	
	2010	2009	2010	2009
New England	**12.65**	**13.46**	**15.05**	**15.77**
Connecticut	14.43	14.92	17.43	18.11
Maine	8.78	9.96	12.67	13.1
Massachusetts	13.18	14.1	14.6	15.65
New Hampshire	12.76	13.98	14.79	15.24
Rhode Island	13.06	12.25	14.14	14.28
Vermont	9.45	9.18	13.2	12.73
Middle Atlantic	**8.52**	**8.19**	**13.67**	**13.02**
New Jersey	11.72	11.79	14.81	14.68
New York	9.64	9.09	16.41	15.59
Pennsylvania	7.6	7.23	10.39	9.63
East North Central	**6.59**	**6.07**	**9.14**	**8.98**
Illinois	7.53	4.38	9.2	9.27
Indiana	5.92	5.84	7.69	7.68
Michigan	7.2	7.05	10.1	9.42
Ohio	6.31	6.81	9.14	9.07
Wisconsin	6.81	6.79	9.74	9.44
West North Central	**5.88**	**5.82**	**7.97**	**7.69**
Iowa	5.43	5.38	7.74	7.5
Kansas	6.14	6.15	8.27	8.05

[19] U.S. ENERGY INFO. ADMIN., U.S. DEP'T OF ENERGY, ELECTRIC POWER MONTHLY JANUARY 2011: WITH DATA FOR OCTOBER 2010, at 117, table 5.6.B (2011), http://www.eia.doe.gov/ftproot/electricity/epm/02261101.pdf.

Minnesota	6.31	6.32	8.42	8.21
Missouri	5.59	5.55	7.91	7.51
Nebraska	6.02	5.91	7.57	7.33
North Dakota	5.68	5.27	7.04	6.68
South Dakota	5.91	5.65	7.78	7.4
South Atlantic	**6.65**	**6.72**	**9.67**	**9.92**
Delaware	9.66	9.37	12	12.18
District of Columbia	8.47	8.52	13.85	13.09
Florida	8.82	9.37	10.6	11.51
Georgia	6.23	6.17	8.98	8.89
Maryland	9.49	9.99	12.78	13.19
North Carolina	6.19	6.01	8.77	8.51
South Carolina	5.68	5.82	8.47	8.45
Virginia	6.75	6.94	8.76	8.97
West Virginia	5.81	5.21	7.38	6.58
East South Central	**5.86**	**5.9**	**8.2**	**8.23**
Alabama	6.04	5.97	8.99	8.91
Kentucky	5.05	4.97	6.72	6.6
Mississippi	6.37	6.72	8.65	8.93
Tennessee	6.62	6.88	8.62	8.81
West South Central	**6.07**	**6.29**	**8.79**	**9.05**
Arkansas	5.47	5.78	7.27	7.62
Louisiana	5.94	5.41	7.87	7.18
Oklahoma	5.23	4.86	7.59	7.04
Texas	6.34	6.81	9.41	9.96
Mountain	**6.27**	**6.19**	**8.74**	**8.5**
Arizona	6.81	6.75	9.85	9.7
Colorado	7.02	6.4	9.3	8.26
Idaho	5.23	5.26	6.55	6.45

Montana	5.59	5.48	7.79	7.58
Nevada	7.75	8.27	9.96	10.5
New Mexico	6.13	5.83	8.58	8.18
Utah	5.08	4.93	7.09	6.89
Wyoming	4.98	4.85	6.21	6.1
Pacific Contiguous	**8.03**	**7.93**	**11.54**	**11.21**
California	11.12	10.25	14.05	13.46
Oregon	5.46	5.38	7.56	7.45
Washington	3.95	4.41	6.55	6.57
Pacific Noncontiguous	**19.72**	**16.48**	**21.11**	**18.65**
Alaska	13.99	12.96	14.82	15.12
Hawaii	21.8	17.74	24.96	20.81
U.S. Total	**6.85**	**6.77**	**9.94**	**9.91**

Supply, demand, the cost of fuel, and regulatory controls all contribute heavily to the cost of energy. In the U.S., for instance, the average price of electricity to industrial customers for states in the population-dense New England region was 12.65 cents per Kilowatt-hour (KWh), similar in cost to the Middle-Atlantic states of New Jersey, New York and Pennsylvania, which average 8.52 cents a KWh. Environmental pressures on generation capacity contributed to push California to a similarly high rate of 11.12 cents per KWh.[20] States with abundant power, typically those with hydroelectric sources of power, offer the lowest industrial rates in the nation. The state of Washington, which boasts some of the nation's largest data centers and other energy-intensive manufacturing facilities, averages 3.95 cents per KWh due to its large hydro capacity.[21] The South-Atlantic states of South Carolina, North Carolina, and Georgia, vary only 0.55 cents per KWh from the lowest (South Carolina) to the highest (Georgia). These South-Atlantic states are fierce competitors with one another for economic development projects. Their energy cost parity underscores

[20] *See id*.
[21] *See id*.

how even small rate increases may have a dramatic impact on energy-intensive projects.[22]

While states continue to fight amongst each other for new investment and jobs, global competition has increasingly become a factor in site selection decisions. Canadian industrial customers average 5.9 cents per KWh for the most recent year available (2006), while Mexico's average rate was 12.6 cents per KWh in 2008. By comparison, the United States' average industrial rate is 7 cents per KWh in 2008.[23] The industrialized nations that remain the source for many of the South's best new manufacturing entrants include the United Kingdom, Germany, and France. In 2007, Germany's average rate was 10.9 cents per KWh.[24] The United Kingdom's was 13 cents per KWh.[25] France, bolstered by a strong nuclear generation base, has kept its average industrial rate to 6 cents per KWh in 2008.[26]

While reliable data on the price of electricity in China is not available, news reports suggest a dramatic increase in usage has driven up the cost for non-residential users by 0.4 cents per KWh as recently as 2008.[27] China gets 71% of its total primary energy from coal. China is both the largest consumer and producer of coal in the world; however, China is responding to these demands by operating twelve nuclear plants with an additional twenty-four under construction and an upward of seventy-five units being planned.[28]

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[22] *Id.*

[23] *See* U.S. ENERGY INFO. ADMIN., U.S. DEP'T OF ENERGY, MONTHLY ENERGY REVIEW: MAY 2010, at 128, table 9.9 (2010), http://www.eia.gov/FTPROOT/multifuel/mer/00351005.pdf; *see also* INT'L ENERGY AGENCY, ENERGY PRICES & TAXES - QUARTERLY STATISTICS, FOURTH QUARTER 2009, tables 18 & 21(2009).

[24] *Id.*

[25] *Id.*

[26] *Id.*

[27] *China Raises Price of Electricity for Non-Residential Use*, XINHUA NEWS (Nov. 29, 2009, 3:12 PM), http://news.xinhuanet.com/english/2009-11/19/content_12492364.htm.

[28] *See* ENERGY STATISTICS DATABASE, U. N. STATISTICS DIV., COAL PRODUCTION BY COUNTRY, http://data.un.org/Data.aspx?d=EDATA&f=cmID%3aCL%3btrID%3a01#EDATA (last updated Dec. 9, 2009); DELOITTE TOUCHE TOHMATSU LTD., ENERGY PREDICTIONS 2011 4 (2010), *available at* http://www.deloitte.com/assets/Dcom-Global/Local%20Assets/Documents/Energy_Resources/6810A_EnergyPredict10_sm5.pdf.

II. ENERGY POLICY

While energy policy implicates all levels of government, this paper is limited to addressing the importance of planning and policy at the state level and the potential for federal energy policy to impact state-level planning and economic development. The same is true of economic development policy and planning.

A. STATE ENERGY POLICY

During the last five years, states were busy enacting various forms of energy-related legislation. State action ranged from very broad and comprehensive legislation, such as the Global Warming Solutions Act of 2006 passed by the California Legislature and signed by former Governor Arnold Schwarzenegger in 2007,[29] to more limited and specific legislation mandating greater energy efficiency in governmental buildings.[30]

The California Global Warming Solutions Act attempts to reduce greenhouse gas emissions by implementing a regional cap-and-trade system and mandating more renewable sources of generation. Because California's economy is larger than most countries and accounts for 13% of the gross domestic product of the United States, the legislation's impact reaches well beyond businesses in California. For this reason, the business community tried to suspend the Global Warming Solutions Act by ballot initiative on November 2, 2010.[31] The initiative, known as Proposition 23, stated that when the Global Warming Solution Act was passed, "the unemployment rate in California was 4.8 percent. California's unemployment rate has since skyrocketed to more than 12 percent."[32] Proposition 23 argued that the law would hurt business by raising energy costs among other things, and the Act should be suspended until California unemployment reached 5.5%.[33] The ballot initiative was defeated 61.6%– 38.4%.[34]

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[29] California Global Warming Solutions Act of 2006, Assemb. 32, 2005-2006 Leg. (Cal. 2006), *available at* http://www.leginfo.ca.gov/pub/05-06/bill/asm/ab_0001-0050/ab_32_bill_20060927_chaptered.pdf.

[30] In June of 2007, South Carolina passed a green building standard for all State buildings. S.C. Code Ann. § 48-52-800 – 860 (1976 & Supp. 2010).

[31] For the full text of Proposition 23, *see* CAL. SEC'Y OF STATE, TEXT OF PROPOSED LAWS 106 (2010), http://www.voterguide.sos.ca.gov/pdf/english/text-proposed-laws.pdf.

[32] *Id.*

[33] *Id.*

The most common form of state legislation, and the type that will directly impact energy cost and bolster economic development efforts, is "renewable standard" legislation. Approximately twenty-eight states now have renewable standards enacted into law.[35] A renewable standard mandates that a certain percentage of a state's electricity is generated by so-called renewable sources. Renewable sources include biomass, solar thermal, photovoltaic, wind, geothermal, fuel cells using renewable fuels, small hydroelectric, digester gas,[36] landfill gas, and tidal current as the most common.[37]

Not only do the definitions of renewable sources vary, but the mandated percentage and the date by which such percentages must be met also vary from state to state. For example, California's renewable standard is 33% and must be met by 2020.[38] Vermont's is 10% and must be met by 2013. Texas' is 5,880 megawatts, roughly 5%, and must be met by 2015. At least one state, North Carolina, allows efficiency efforts to be included in its mandated goal of 12.5% by 2021.[39] Because no two states have the same renewable standard there is a patchwork of slightly different standards from state to state. This causes confusion for electric generators that operate in several states. Federal lawmakers who oppose a national renewable standard argue, ironically, that the current state patchwork is evidence that a Federal

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[34] CAL. SEC'Y OF STATE, VOTES FOR AND AGAINST NOVEMBER 2, 2010, STATEWIDE BALLOT MEASURES (2010) http://www.sos.ca.gov/elections/sov/2010-general/07-for-against.pdf.

[35] For a summary of renewable standards enacted by the states, *see States with Renewable Portfolio Standards*, U.S. DEP'T OF ENERGY, http://apps1.eere.energy.gov/states/maps/renewable_portfolio_states.cfm (last visited May 25, 2011); *see also Renewable & Alternative Energy Portfolio Standards*, PEW CTR. ON GLOBAL CLIMATE CHANGE, http://www.pewclimate.org/what_s_being_done/in_the_states/rps.cfm (last visited May 25, 2011).

[36] In January 2011, South Carolina announced the first plant to generate electricity from the methane released by hog waste, known as anaerobic digestion. *See Piggy Power: Electricity from Hog Waste a SC First*, GOUPSTATE.COM, Jan. 31, 2011, http://www.goupstate.com/article/20110131/WIRE/110139965/1086?Title=A-first-for-SC-Electricity-from-hog-waste.

[37] Each state has a slightly different list of renewable generation.

[38] *See* CAL. SEC'Y OF STATE, *supra* note 34.

[39] 2007 N.C. Sess. Laws 397.

renewable standard is not needed.[40] President Obama has called for a national renewable standard requiring that 80% of our energy come from clean sources by 2035.[41]

The push toward renewable standards presents two main problems for economic development policy. First, renewable sources, on average, cost more to produce, thus making the cost of electricity higher.[42] Second, many renewable generation sources, such as wind and solar, cannot produce steady base load generation that big manufacturers depend on to run their operations. Both of these problems work against renewable standards as it relates to economic development planning. That said, this paper does not advocate against renewable generation. In fact, if done correctly, renewable generation can be a form of economic development.[43] Instead, this paper argues all aspects of energy policy must be considered as a part of economic policy because of the substantial impact energy generation has on economic development. Policies that drive up the cost of electricity will discourage high energy consuming industries. The aluminum industry provides an example. Approximately one-third of the cost of producing aluminum is attributable to electricity necessary to make it.[44] For this reason, aluminum production has long been concentrated in locations where there is cheap and plentiful electricity, such as Iceland. Iceland generates 80% of its power is from hydroelectric and thermal

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[40] *See* Kimberly A. Strassel, *Cap and Trade Returns From the Grave*, WALL ST. J., Jan. 28, 2011, http://online.wsj.com/article/SB10001424052748703893104576108501552298070.html.

[41] Ryan Tracy, *Obama Renews Clean Energy Push*, WALL ST. J., Jan. 29, 2011, http://online.wsj.com/article/SB10001424052748704653204576111680111802042.html.

[42] Matthew L. Wald, *Cost Works Against Alternative and Renewable Energy Sources in Time of Recession*, N.Y. TIMES, Mar. 28, 2009, http://www.nytimes.com/2009/03/29/business/energy-environment/29renew.html.

[43] Commentators have advocated a so-called "green revolution" as a matter of national security. *See, e.g.*, Thomas L. Friedman, Op-Ed., *The Green Revolution(s)*, N.Y. TIMES, Jun. 23, 2009, http://www.nytimes.com/2009/06/24/opinion/24friedman.html; THOMAS L. FRIEDMAN, HOT, FLAT, AND CROWDED: WHY WE NEED A GREEN REVOLUTION—AND HOW IT CAN RENEW AMERICA (2008).

[44] For additional information on energy consumption by aluminum producers, *see* Aluminum Statistical Review of 2000, ALUMINUM ASS'N, 2001, http://www.aluminum.org.

sources.[45] Some fear that U.S. energy costs could drive all aluminum production overseas, which is of great concern considering the high strategic importance of aluminum.

B. FEDERAL ENERGY POLICY

Americans got a look at what federal climate change legislation might look like when the so-called Waxman-Markey Bill passed the House of Representatives in 2009.[46] Title I of the bill included a combined efficiency and renewable electricity standard, much like many state standards.[47] Title II addressed energy efficiency in buildings, transportation, and industry.[48] The most controversial title dealt with "reducing global warming" and contained the dreaded "cap and trade" provision. Cap and trade would "cap" the total level of greenhouse emissions and allocate a proportional share to all carbon-producing generators. Generators that produce less than their allotment of greenhouse emission would be able to "trade" their credits to producers that exceed their allotment for cash, thus creating a market incentive to lower overall emissions. Cap and trade would necessarily make carbon-based fuels, such as coal and natural gas, more costly. While Waxman-Markey did not pass, it offered an example of what federal energy policy might look like. There was little doubt Waxman-

[45] Jorunn Gran, *Renewable Energy in Iceland*, NORDIC ENERGY SOLUTIONS (Feb 18, 2009), http://www.nordicenergysolutions.org/performance-policy/iceland/renewable-energy-in-iceland?searchterm=iceland.

[46] The American Clean Energy and Security Act, H.R. 2454, 111th Cong. (1st Sess. 2009); *see also At a Glance: American Clean Energy and Security Act of 2009*, PEW CTR. ON GLOBAL CLIMATE CHANGE, http://www.pewclimate.org/docUploads/Waxman-Markey-short-summary-revised-June26.pdf (last visited May 25, 2011).

[47] *Id.*

[48] *Id.*

Markey would have increased the cost of electricity.[49] However, estimates varied as to the extent of the impact.[50]

However, the death of Waxman-Markey does not mean the death of far-reaching federal energy policy. In April 2009, the Environmental Protection Agency (EPA) formally declared carbon dioxide and five other heat-trapping gases "pollutants" that endanger public health and welfare, thereby enabling the EPA to regulate these gases under the Clean Air Act.[51] This potential regulation could have the same effect as legislation, albeit less democratic.[52] Whether the EPA will succeed in regulating carbon emissions remains unclear.[53]

C. FOREIGN ENERGY POLICY

Our foreign competitors are heavily reliant on coal as a means of generating low-cost, reliable power and appear to have no intention of abandoning coal. For example, South Korea currently plans to add as much as fifteen gigawatts of new coal-fired generating capacity before 2022.[54] China, already heavily reliant on coal, shows no sign of abating despite often being touted as a leader in renewable generation.

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[49] Steven Mufson, *Climate Bill to Cost Average Consumer $175 a year: CBO*, WASH. POST, June 23, 2009, http://www.washingtonpost.com/wp-dyn/content/article/2009/06/22/AR2009062202836.html.

[50] *The Economic Impact of the Waxman-Markey Cap-and-Trade Bill: Hearing on H.R. 2454 Before the S. Republican Conf.*, 111th Cong. (2009) (statement of Ben Lieberman, Senior Policy Analyst for Energy and the Environment, Thomas A. Roe Institute for Economic Policy Studies at The Heritage Foundation), *available at* http://www.heritage.org/research/testimony/the-economic-impact-of-the-waxman-markey-cap-and-trade-bill.

[51] John M. Broder, *E.P.A. Clears Way For Greenhouse Gas Rules*, N.Y. TIMES, Apr. 17, 2009, http://www.nytimes.com/2009/04/18/science/earth/18endanger.html.

[52] *See id.*

[53] At the time this article went to press, Republicans in the United States House of Representatives were working on legislation to strip the EPA of its power to regulate greenhouse gases under the Clean Air Act. *See* Darryl Fears, *House GOP Readies Bill to Prohibit EPA from Regulating Carbon Emissions*, WASH. POST, Feb. 3, 2011, http://www.washingtonpost.com/wp-dyn/content/article/2011/02/02/AR2011020203720.html.

[54] *The 4th Basic Plan of Long-Term Electricity Supply and Demand (2008-2022)*, MINISTRY OF KNOWLEDGE ECON. (Feb. 2008) (S. Kor.), http://www.kpx.or.kr/english/news/data/the_4th_basic_plan.pdf.

China intends to get over 80% of its power from coal through 2020.[55] Approximately 70% of India's electricity comes from coal burning plants—and it is expected to grow.[56] The United States, on the other hand, uses coal for less than 50% of its electricity generation.[57]

China, South Korea, and India are all economic development competitors, often competing directly with the United States for jobs. Each benefits from low wages and low power costs. Additionally, each country is working hard to raise the standard of living for their people, who are largely poor, by providing inexpensive, reliable electricity. Each of these countries, especially China, has a system of government that allows greater central control over their respective economies enabling direct management of power generation and job creation. The United States cannot enact energy policy in a vacuum. What goes on in China and India matters here and must be considered in our energy policy at the state and federal level.

III. ECONOMIC DEVELOPMENT PLANNING AND ENERGY PLANNING

A. ECONOMIC DEVELOPMENT PLANNING

Strategic planning is like eating broccoli. We all know it is good for you, but hardly anyone likes it. However, broccoli cooked right and eaten promotes overall health. Similarly, a well-written strategic plan helps a company or government achieve goals. Strategic planning is particularly important where the field is complex with many potential pitfalls. Economic development and energy policy is precisely the type of field that requires a comprehensive strategic plan. The two components of any strategic plan are the process used to develop the plan and the resulting plan. Each of these can take many forms. Strategic planning principles adopt a process to produce a plan that will (1) set priority objectives; (2) determine how to most effectively utilize

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[55] Keith Bradsher, *China Leading Global Race to Make Clean Energy*, N.Y. TIMES, Jan. 30, 2010, http://www.nytimes.com/2010/01/31/business/energy-environment/31renew.html.

[56] Gayathri Vaidyanathan, *India's Roaring Economy Is Hitched to a Galloping Addiction to Coal*, N.Y. TIMES, Feb. 4, 2010, http://www.nytimes.com/cwire/2010/02/04/04climatewire-indias-roaring-economy-is-hitched-to-a-gallo-20341.html.

[57] U.S. ENERGY INFO. ADMIN., DOE/EIA-0226 (2011/06), ELECTRIC POWER MONTHLY JUNE 2011, http://ftp.eia.doe.gov/cneaf/electricity/epm/epm.pdf.

available resources; and (3) set up a plan to achieve the priority objectives with those resources.

State economic development strategic plans take many forms; however, this paper simplifies these into two common types. The first, practiced in North Carolina, is "systematic planning," while the second, practiced in South Carolina, is "ad hoc" planning. Systematic planning is consistent and continual in nature. It generally follows a process that helps it be consistent and continual. Ad hoc planning on the other hand is often precipitated by a special event. Both approaches have pros and cons. For example, while systematic planning may benefit from its regularity, such regularity may fail to incite and inspire those whom the plan hopes to guide. Systematic planning also risks producing a document that goes right into a drawer, never to be seen. We advocate systematic planning in conjunction with ad hoc planning.

1. NORTH CAROLINA ECONOMIC DEVELOPMENT STRATEGIC PLANNING

Economic development strategic planning in North Carolina is so systematic that the plan and the process to develop the plan are prescribed by statute.[58] Economic development planning in North Carolina is done by the statutorily-created Economic Development Board.[59] The Board is comprised of a cross-section of economic development officials, business leaders, and politicians. The statute required the Board to prepare a Comprehensive Strategic Economic Development Plan in 1994 and to update it annually.[60] The Plan covers four years and is a large, detailed document, almost fifty pages long. The Plan establishes general goals that are each supported by specific objectives. Responsibilities and deadlines for each objective are assigned along with funding levels and the expected outcome and return on investment. For example, one goal of the Plan is to develop an outstanding education system and a highly-qualified workforce. Pursuant to this goal, one objective would adjust the funding formula for occupational extension continuing education in the North Carolina Community College system.

[58] N.C. GEN. STAT. § 143B-434 (2010).
[59] N.C. GEN. STAT. § 143B-434(a).
[60] N.C. GEN. STAT. § 143B-434.01(b).

2. SOUTH CAROLINA ECONOMIC DEVELOPMENT PLANNING

South Carolina governors and commerce secretaries have pursued various economic development plans, strategies, and objectives over the years. During the last thirty years, South Carolina has employed an opportunistic strategy searching the country and globe for potential investors. It was often referred to as "Chasing Smokestacks" as recruiters went to the Rust Belt and offered low costs and lots of sunshine. Such efforts, however, did not really reach the level of economic development strategic planning until the so-called South Carolina Competitiveness Initiative.[61] The Initiative was a public-private partnership led by the Palmetto Institute and the South Carolina Department of Commerce. The Initiative was managed by an international consulting firm, The Monitor Group, and led by Harvard Professor Michael E. Porter.[62] The Porter Study advocated moving away from the traditional, low-cost approach of economic development to a more directed, specific, industry-focused approach, commonly known as the "cluster approach."[63] The cluster approach focuses on developing similar new businesses geographically near existing industries that are already enjoying success. The plan is as much about economic development as it is about prosperity enhancement or raising the standard of living, which is commonly measured by a state's per capita income level. The South Carolina Competitive Initiative created the South Carolina Council on Competitiveness to act on the Initiative's goals. The Council is now known as New Carolina. One significant shortcoming of the Porter Study is that it can best be characterized as an approach, rather than a specific plan of action. The Porter Study is a framework for a plan, but not a plan in and of itself.

Economic development planning in South Carolina and North Carolina are similar in that energy does not seem to be a consideration of either state. Neither plan considers or adequately coordinates their respective economic development strategies with energy policy.

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[61] *See* MICHAEL E. PORTER, MONITOR GROUP & S.C. COUNCIL ON COMPETITIVENESS, SOUTH CAROLINA COMPETITIVENESS INITIATIVE: A STRATEGIC PLAN FOR SOUTH CAROLINA (2005).

[62] The final report is often referred to as the "Porter Study."

[63] *See* PORTER ET AL., *supra* note 61, at 10.

B. STATE ENERGY PLANNING

Not all states have an energy plan. South Carolina, for example, does not have a comprehensive statewide plan.[64] North Carolina, on the other hand, has a detailed and comprehensive State Energy Plan.[65] One major aim of the North Carolina plan is "to promote economic development, achiev[e] reliable supplies of energy at reasonable and stable prices . . . ."[66] State energy plans typically acknowledge the importance of energy prices to businesses in passing; unfortunately, these plans tend to lack the analysis or foresight to address how to help businesses manage rising or unstable energy costs. The North Carolina State Energy Plan also promotes and generation source diversity and increased efficiency. An additional objective of the State Energy Plan is the impact of generation and use of energy on the environment, which of course, can be counter to maintaining low costs. The North Carolina Plan accepts the need to confront national energy problems such as over reliance on carbon-based sources and a lack of diversity in our energy sources. North Carolina has adopted an approach that confronts these challenges in a gradual fashion in order to preserve a "reasonable and stable" price for existing energy sources. In other words, plans like that adapted in North Carolina address a host of issues, but there is no common theme of how important energy costs and availability are to businesses.

IV. RECOMMENDATIONS

A. STRUCTURAL CHANGES

State policymakers should recognize that energy policy is linked to commerce and economic development. Structurally, we recommend locating all state offices that set energy policy in the same department or cabinet responsible for directing economic development. For example, in South Carolina, the Department of Commerce, a cabinet-level department with its Secretary appointed by the Governor, directs and runs economic development activities. Yet the State Energy Office is located within the Budget and Control Board, a catchall quasi-executive, quasi-legislative administrative entity. We recommend that South Carolina follow the example of other states such as West

[64] *See* FINAL REPORT, *supra* note 3.
[65] *See* N.C. STATE ENERGY OFFICE ET AL., *supra* note 4.
[66] *Id.* at 13.

Virginia and Minnesota and move the Energy Office within and under the Department of Commerce.[67]

B. PLANNING CHANGE

Moving the Energy Office to the Department of Commerce would facilitate coordination of energy and economic development planning. We believe planning should be consistent and continual in order to be effective. To be consistent, planning must follow a process that allows a set group of stakeholders to participate. To be continual, planning must be reviewed and modified on, at least, an annual basis. But how does a state ensure that planning happens and that it happens consistently and continually? And, how do you ensure that energy planning and economic development planning are coordinated? The best way appears to be to mandate it by law similar to what North Carolina has done. However, unlike North Carolina, South Carolina should add a statutory requirement mandating that energy policy and economic development policy are coordinated, contrary to North Carolina's current regime. Our recommended structural changes, set forth above, would greatly facilitate this coordination.

C. ECONOMIC DEVELOPMENT POLICY

A state's economic development policy must be cognizant of the state's current energy cost structure and how costs could change due to market forces, such as export demand for coal or non-market forces, for instance federal, legislative, or regulatory change. In other words, if a state has some of the lowest power costs in the nation, how do you adjust your recruiting efforts if your energy costs disproportionally increase relative to other states due to federal legislation or regulation? Undoubtedly, legislation like Waxman-Markey would raise the cost of electricity in the more heavily coal-reliant Southeast disproportionally to the West and Northeast, weakening one of the Southeast's most powerful recruiting tools. Higher electricity costs would force states like South Carolina to choose between shifting focus to less energy-intensive industries, such as distribution, or adding new arrows to the

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[67] *See* W. VA. DEP'T OF COMMERCE – ENERGY, http://www.wvcommerce.org/energy/default.aspx (last visited June 18, 2011); DIV. OF ENERGY RES., MINN. DEP'T OF COMMERCE, http://www.state.mn.us/portal/mn/jsp/home.do?agency=Energy (last visited June 18, 2011).

recruiting quiver in an effort to replace the loss of low energy costs. In addition, the less attractive a state is, the more likely it will have to offer incentives that impact state revenue.

D. ENERGY POLICY

Generally, any energy policy must have the foremost goal of making electricity available, reliable, and affordable. In order to meet these goals in the long-term, energy planning must deliberately move away from over-reliance on carbon-based fuels, especially coal as currently used in power generation. This does not mean shutting down coal plants that have useful life. It does mean not building new coal plants without clean coal technology. At the same time, policymakers must recognize that coal is abundant, domestic, and inexpensive. Additionally, South Carolina must consider what foreign competitors are doing with regard to power generation. For that reason, clean coal technologies must be a part of our energy future. South Carolina should consider other policies in addition to those mentioned above.

1. GO NUCLEAR

Nuclear power must play a greater role. Nuclear power, along with coal, provides the primary source of base load generation necessary for large industry operations. Second, other than disposal issues, which are mostly political issues, nuclear power emits no carbon. While federal permitting is key, there are a host of state permits and approvals necessary for the siting and construction of new power plants, which give states an opportunity to facilitate additional plants. States can also encourage, through policy statements and regulatory support, the utilities it regulates to cooperate and partner in the construction of new nuclear generation to better spread the large financial burden. Finally, rate setting, which allows utilities to pass on costs to consumers, is exclusively done at the state level and can help facilitate the construction of new nuclear power plants.

2. EFFICIENCY AND CONSERVATION

Efficiency and conservation need to be viewed by power generators and regulators of power generators as a form a power generation. North Carolina has done this by including efficiency

efforts into its renewable standard.[68] Robust efficiency and conservation efforts can have a greater impact than carbon taxes and renewable standards and, unlike carbon taxes and renewable standards, at a far lower cost to consumers and businesses. These efforts also have an important social justice aspect since the most inefficient housing is owned by low-income consumers who are least able to pay a high power bill. Efficiency and conservation programs must be supported and expanded. Expanding conservation and efficiency programs also requires providing investor-owned utilities with an economic incentive to get them fully on board. Efficiency and conservation initiatives cannot succeed without the support of private utilities. State policymakers can and should use their rate-making power to create incentives private utilities will support.

3. REGULATORY FLEXIBILITY

State law must allow for regulatory flexibility on many fronts. Permitting new nuclear and clean coal at the federal, state, and local levels must be eased and fast tracked. Rate setting, an exclusively state function, must allow utilities to re-coup costs for efficiency and conservation efforts, such as investments in smart grid technology.

4. DELIBERATELY MOVE AWAY FROM CARBON BASED FUELS

Policies that encourage diversity of generation as well as cleaner, more environmentally friendly generation are needed as long as they are balanced with the needs of industrial power consumers. The costs to industry and the consequences of higher costs must be considered and fully understood. Efforts to reduce costs, without subsidies, should be promoted. The manner and speed in which renewables are brought on line must account for "grid parity"—the point at which the cost of electricity generated from nonrenewables rivals that generated by traditional sources.[69] The time a given renewable takes to reach grid parity will be a function of local climate and utility rates, among other things.[70]

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[68] *See* 2007 N.C. Sess. Laws 397.
[69] DELOITTE TOUCHE TOHMATSU LTD., *supra* note 28, at 5.
[70] *Id.*

5. CLEAN COAL

Coal is and will remain for sometime our most abundant, reliable, and cost effective fuel source for electricity. Even fairly liberal publications are starting to acknowledge this fact.[71] What is needed is technology to make coal cleaner and more efficient. The Chinese have embraced this fact and are leading the way. Fortunately, the United States is working with the Chinese.

V. CONCLUSION

The sooner policymakers recognize the importance of energy cost and reliability to economic development, the sooner there will be sound energy policy, energy policy that attracts rather than drives away business. If energy policy and economic development policy continue to develop independent of one another, each will fail. If each fails, so do the businesses that make our nation an economic power.

[71] *See* James Fallows, *Dirty Coal, Clean Future* , ATLANTIC, Dec. 2010, *available at* http://www.theatlantic.com/magazine/archive/2010/12/dirty-coal-clean-future/8307/.